## AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

## LISTING OF CLAIMS

1. [ORIGINAL] A method of setting up a connection through an Asynchronous Transfer Mode (ATM) switching network between a sink node and a multicast tree, the multicast tree being coupled to the ATM switching network via an ingress node, and the sink node being coupled to the ATM switching network via an access module, the method comprising the steps of:

   a) identifying the access module through which the sink node is coupled to the ATM switching network;

   b) sending a message to the access module requesting that the sink node be connected to the multicast tree;

   c) grafting a leaf to the multicast tree at the access module to connect the sink node to the multicast tree; and

   d) merging multicast packets into an existing service connection for the sink node.

2. [ORIGINAL] A method as claimed in claim 1, wherein the step of identifying is performed by the ingress node, which is a service gateway to an Internet Protocol (IP) network, and an associated multicast service access point.

3. [ORIGINAL] A method as claimed in claim 2, wherein the step of identifying comprises a step of examining a virtual channel (VC) on which a join request message was received from the sink node to identify the access module and the sink node.

4. [ORIGINAL] A method as claimed in claim 3, wherein the access module is one of a digital subscriber line access multiplexer (DSLAM); cable headend; wireless headend;

satellite base station; ATM side of customer premise equipment; and optical line termination.

5. [ORIGINAL] A method as claimed in claim 1, wherein the step of merging the multicast packets into the existing service connection further comprises a step of performing a virtual channel (VC) merge, to merge the multicast packets with other IP packet traffic for the sink node.

6. [ORIGINAL] A method as claimed in claim 5, wherein the step of performing the VC merge is performed by the access module.

7. [ORIGINAL] A method as claimed in claim 1, wherein if the identified access module is not branched to the multicast tree, the method further comprises a step of connecting the access module to the multicast tree.

8. [ORIGINAL] A method as claimed in claim 7, wherein the step of connecting the access module to the multicast tree comprises steps of:

a) establishing a switched virtual circuit (SVC) connection between the access module and the ingress node through the ATM switching network, if required;

b) grafting a leaf to the multi-cast tree for the sink node; and

c) performing a VC merge, to merge the multicast packets with other IP packet traffic for the sink node.

9. [ORIGINAL] A system for setting up a connection through an Asynchronous Transfer Mode (ATM) switching network between a sink node and a multicast tree, the multicast tree being coupled to the ATM switching network via an ingress node, and the sink node being coupled to the ATM switching network via a respective one of a plurality of access modules, the system comprising:

a) means for identifying an access module through which the sink node is coupled to the ATM switching network;

b) means for determining whether the identified access module is already part of the multicast tree;

c) means for grafting a leaf to the multicast tree at the identified access module when the identified access module is connected to the multicast tree; and

d) means for merging multicast packets with other IP traffic on an existing service channel for the sink node.

10. [ORIGINAL] A system as claimed in claim 9, wherein the ingress node is a Internet Protocol Service Gateway (IPS GWY).

11. [ORIGINAL] A system as claimed in claim 10, wherein the means for identifying the access module and the sink node comprises means for relating a virtual channel (VC) on which a join request is received from the sink node with an access module that supports the virtual channel.

12. [ORIGINAL] A system as claimed in claim 9, wherein the means for determining whether the identified access module is part of the multicast tree comprises:

a) a multicast session identifier sent from the ingress node to the access module, the multicast session identifier uniquely identifying the multicast session; and

b) means for using the multicast session identifier at the access module to determine whether multicast traffic associated with the multicast session identifier is being received at the access module.

13. [ORIGINAL] A system as claimed in claim 10, further comprising means for performing a VC merge at the access module.

14. [ORIGINAL] A system as claimed in claim 9, further comprising means for grafting a branch to the multicast tree from the ingress node to the access module, if the access module is not branched to the multicast tree.

15. [ORIGINAL] A system as claimed in claim 14, wherein the means for grafting the branch to the multicast tree at the access module comprises:

a) means for establishing a virtual circuit (VC) connection between the ingress node and the access module through the ATM switching network;

b) means for grafting the leaf to the branch of the multicast tree; and

c) means for performing a VC merge to merge multicast packets with other IP packets arriving for the sink node.

16. [ORIGINAL] An Internet Protocol Service Gateway (IPS GWY) adapted to reduce duplication of multicast traffic through an Asynchronous Transfer Mode (ATM) switching network, the IPS GWY comprising:

a) means for identifying an access module through which a sink node that requested a join to a multicast tree is coupled to the ATM switching network;

b) means for requesting the access module to join the sink node to the multicast tree; and

c) means for setting up a virtual connection to the access module to connect the access module to the multicast tree.

17. [ORIGINAL] An IPS GWY as claimed in claim 16, wherein the means for identifying the access module and the sink node comprises a table that relates a virtual channel (VC) on which a join request was received with a network address of the access module and the sink node.

18. [ORIGINAL] An IPS GWY as claimed in claim 16, wherein the means for requesting the access module to join the sink node to the multicast tree comprises means for formulating a signaling message to request the join and for sending the signaling message to the access module.

19. [ORIGINAL] An IPS GWY as claimed in claim 16 wherein the IPS GWY controls an associated multicast service access point (multicast SAP) that supplies multicast packets to the access module.

20. [ORIGINAL] An IPS GWY as claimed in claim 19 wherein the multicast SAP is co-located with the IPS GWY.

21. [ORIGINAL] An IPS GWY as claimed in claim 19 wherein the multicast SAP is remote from the IPS GWY and controlled by at least one IPS GWY.

22. [CANCELLED]

23. [PREVIOUSLY PRESENTED] An access module for an Asynchronous Transfer Mode (ATM) switching network adapted to enable grafting of a connection between a sink node and a multicast tree, the access module being coupled to the ATM switching network and the sink node, the access module comprising means for grafting a leaf to the multicast tree to connect the sink node to the multicast tree, and the access module comprises any one of a digital subscriber line access multiplexer (DSLAM); cable headend; wireless headend; satellite base station; ATM side of customer premise equipment; and optical line termination.

24. [ORIGINAL] An access module as claimed in claim 23, wherein the means for grafting comprises:

a) means for receiving a signaling message from an ingress node through which the sink node internet protocol (IP) virtual circuit (VC) enters the ATM switching network, the signaling message requesting that the access module connect the sink node to the multicast tree; and

b) means for performing a virtual channel (VC) merge to merge the multicast packets with other IP traffic for the sink node.

25. [ORIGINAL] An access module as claimed in claim 24 further comprising:

means for receiving a further signaling message from the ingress node, the further signaling message instructing that the sink node be disconnected from the multicast tree.

26. [ORIGINAL] An access module as claimed in claim 25, further comprising means for disconnecting the sink node from the multicast tree and ending the VC merge.

27. [ORIGINAL] An access module as claimed in claim 26 further comprising means for disconnecting from the multicast tree after all sink nodes are disconnected from the multicast tree.

28. [ORIGINAL] A method of providing multicast service delivery to an end-user of ATM access services served by an access module connected to an asynchronous transfer mode (ATM) switching network, comprising steps of:

a) setting up a separate connection between an access module serving a plurality of the end-users and a gateway for delivering multicast packets from a source network, to permit the multicast packets to be transferred across the ATM switching network independently of any end-user virtual channel (VC) supported by the access module; and

b) merging the multicast packets with other Internet Protocol (IP) traffic on the end-user VC at the access module, to deliver the multicast packets to the end-user.

29. [ORIGINAL] The method as claimed in claim 28 wherein the separate connection is used to provide the multicast service to each of the plurality of end-users who request to join the multicast session.

30. [ORIGINAL] The method as claimed in claim 29 wherein the gateway instructs the access module to merge the multicast packets with the other IP traffic on the end-user VC.

31. [ORIGINAL] The method as claimed in claim 30 wherein the gateway instructs the access module to end merging the multicast packets with the other IP traffic on the end-user VC when the gateway receives an indication on the end-user VC that the end-user wishes to disconnect from the multicast tree.

32. [ORIGINAL] The method as claimed in claim 29 wherein the separate connection has an associated quality of service guarantee across the ATM switching network.

33. [NEW] A method of setting up a connection through a connection-oriented network between a sink node and a multicast tree, the multicast tree being coupled to the connection-oriented network via an ingress node, and the sink node being coupled to the connection-oriented network via an access module, the method comprising the steps of:

a) identifying the access module through which the sink node is coupled to the connection-oriented network;

b) sending a message to the access module requesting that the sink node be connected to the multicast tree;

c) grafting a leaf to the multicast tree at the access module to connect the sink node to the multicast tree; and

d) merging multicast packets into an existing service connection for the sink node.

34. [NEW] The method as claimed in claim 33, wherein the step of identifying comprises a step of examining a virtual channel (VC) on which a join request message was received from the sink node to identify the access module and the sink node.

35. [NEW] The method as claimed in claim 33, wherein the step of merging the multicast packets into the existing service connection further comprises a step of performing a virtual channel (VC) merge, to merge the multicast packets with other IP packet traffic for the sink node.

36. [NEW] The system for setting up a connection through connection oriented network between a sink node and a multicast tree, the multicast tree being coupled to the connection oriented network via an ingress node, and the sink node being coupled to the connection oriented network via a respective one of a plurality of access modules, the system comprising:

a) means for identifying an access module through which the sink node is coupled to the connection oriented network;

b) means for determining whether the identified access module is already part of the multicast tree;

c) means for grafting a leaf to the multicast tree at the identified access module when the identified access module is connected to the multicast tree; and

d) means for merging multicast packets with other IP traffic on an existing service channel for the sink node.

37. [NEW] The system as claimed in claim 36, wherein the means for identifying the access module and the sink node comprises means for relating a virtual channel (VC) on which a join request is received from the sink node with an access module that supports the virtual channel.

38. [NEW] The system as claimed in claim 36, wherein the means for determining whether the identified access module is part of the multicast tree comprises:

a) a multicast session identifier sent from the ingress node to the access module, the multicast session identifier uniquely identifying the multicast session; and

b) means for using the multicast session identifier at the access module to determine whether multicast traffic associated with the multicast session identifier is being received at the access module.

39. [NEW] The system as claimed in claim 36, further comprising means for performing a VC merge at the access module.

40. [NEW] The system as claimed in claim 36, further comprising means for grafting a branch to the multicast tree from the ingress node to the access module, if the access module is not branched to the multicast tree.

41. [NEW] An Internet Protocol Service Gateway (IPS GWY) adapted to reduce duplication of multicast traffic through a connection oriented network, the IPS GWY comprising:

a) means for identifying an access module through which a sink node that requested a join to a multicast tree is coupled to the connection oriented network;

b) means for requesting the access module to join the sink node to the multicast tree; and

c) means for setting up a virtual connection to the access module to connect the access module to the multicast tree.

42. [NEW] The IPS GWY as claimed in claim 41, wherein the means for identifying the access module and the sink node comprises a table that relates a virtual channel (VC) on which a join request was received with a network address of the access module and the sink node.

43. [NEW] The IPS GWY as claimed in claim 41, wherein the means for requesting the access module to join the sink node to the multicast tree comprises means for formulating a signaling message to request the join and for sending the signaling message to the access module.

44. [NEW] The IPS GWY as claimed in claim 41 wherein the IPS GWY controls an associated multicast service access point (multicast SAP) that supplies multicast packets to the access module.

45. [NEW] An access module for a connection oriented network adapted to enable grafting of a connection between a sink node and a multicast tree, the access module being coupled to the connection oriented network and the sink node, the access module comprising means for grafting a leaf to the multicast tree to connect the sink node to the multicast tree, and the access module comprises any one of a digital subscriber line access multiplexer (DSLAM); cable headend; wireless headend; satellite base station; network side of customer premise equipment; and optical line termination.

46. [NEW] The access module as claimed in claim 45, wherein the means for grafting comprises:

a) means for receiving a signaling message from an ingress node through which the sink node internet protocol (IP) virtual circuit (VC) enters the connection oriented network, the signaling message requesting that the access module connect the sink node to the multicast tree; and

b) means for performing a virtual channel (VC) merge to merge the multicast packets with other IP traffic for the sink node.

47. [NEW] A method of providing multicast service delivery to an end-user of connection oriented access services served by an access module connected to a connection oriented network, comprising steps of:

a) setting up a separate connection between an access module serving a plurality of the end-users and a gateway for delivering multicast packets from a source network, to permit the multicast packets to be transferred across the connection oriented network independently of any end-user virtual channel (VC) supported by the access module; and

b) merging the multicast packets with other Internet Protocol (IP) traffic on the end-user VC at the access module, to deliver the multicast packets to the end-user.

48. [NEW] The method as claimed in claim 47 wherein the separate connection is used to provide the multicast service to each of the plurality of end-users who request to join the multicast session.

49. [NEW] The method as claimed in claim 48 wherein the gateway instructs the access module to merge the multicast packets with the other IP traffic on the end-user VC.

50. [NEW] The method as claimed in claim 49 wherein the gateway instructs the access module to end merging the multicast packets with the other IP traffic on the end-user VC when the gateway receives an indication on the end-user VC that the end-user wishes to disconnect from the multicast tree.

51. [NEW] The method as claimed in claim 48 wherein the separate connection has an associated quality of service guarantee across the connection oriented network.